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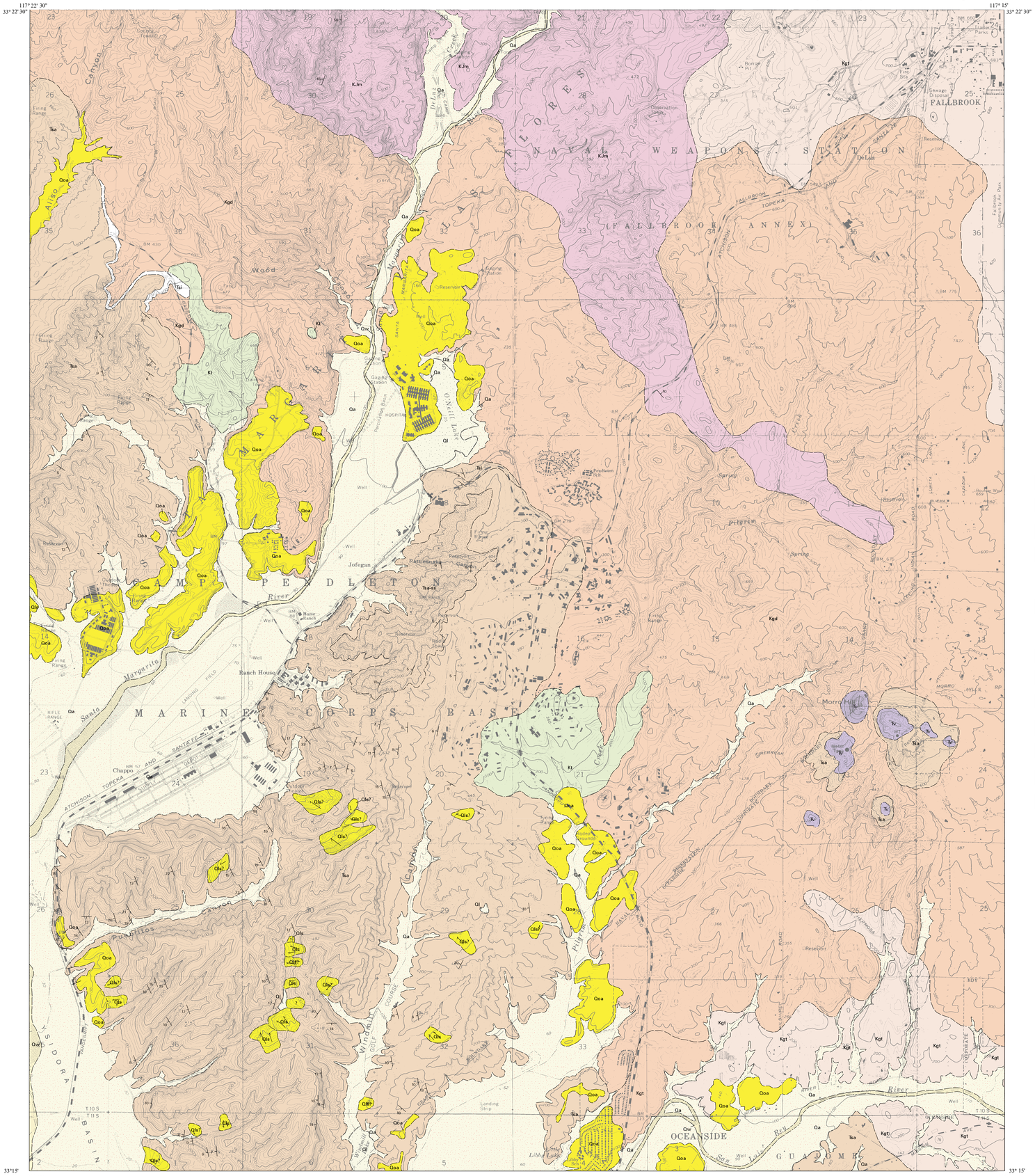
Prepared in cooperation with the U.S. Geological Survey



Topographic base by U.S. Geological Survey
7.5' Morro Hill Quadrangle
Polyconic projection, contour interval 20 feet, dotted lines 10 feet.

UTM GRID AND 1988 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

SCALE 1:24000

MILES
KILOMETERS
THOUSAND FEET

This geologic map was funded in part by the U.S. Geological Survey National Cooperative Geologic Mapping Program, STATEMAP Award no. 00HQAG0120.

GEOLOGIC MAP OF THE MORRO HILL 7.5' QUADRANGLE SAN DIEGO COUNTY, CALIFORNIA: A DIGITAL DATABASE

VERSION 1.0

By
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Digital Database
by
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2001

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DEPARTMENT OF CONSERVATION
Division of Mines and Geology

CORRELATION OF MAP UNITS

Qa, Qw, Ql, Qls, Qoa	Holocene	QUATERNARY	CENOZOIC	
	Pleistocene			
Tv, Tsa, Tsi	Miocene	TERTIARY		
	Eocene			
	Paleocene			MESOZOIC
Kt, Kgt, Kgd		CRETACEOUS		
KJm		JURASSIC		

DESCRIPTION OF MAP UNITS

MODERN SURFICIAL DEPOSITS - Sediment that has been recently transported and deposited in channels and washes, on surfaces of alluvial fans and alluvial plains, and on hillslopes. Soil-profile development is nonexistant. Includes:

Qw — Active wash/stream deposits (late Holocene) - Along major drainage courses; unconsolidated gravelly sand with silt.

Ql — Active lake/lacustrine deposits (late Holocene) - Unconsolidated sandy silt with clay and gravel.

Qa — Active alluvial flood plain deposits (late Holocene) - Unconsolidated to locally poorly consolidated sand and gravel deposits in active alluvial flood plains.

Qls — Landslide deposits (Holocene to Pleistocene) - Landslide slump and rock fall deposits.

OLD SURFICIAL DEPOSITS - Sedimentary units that are moderately consolidated and slightly to moderately dissected. Older surficial deposits have upper surfaces that are capped by moderately to well-developed pedogenic soils. Includes:

Qoa — Older alluvial flood plain deposits (Pleistocene, younger than 500,000 years) - Mostly moderately well consolidated, poorly sorted, permeable flood plain deposits; sand, silt and clay.

BEDROCK UNITS

Tv — Volcanic rocks undivided (Miocene) - Flows of dacitic composition.

Tsa — Santiago Formation (Eocene) - Marine sandstone with siltstone interbeds.

Tsi — Silverado Formation (Paleocene) - Sandstone and claystone.

Kt — Trabuco Formation (Cretaceous) - Non-marine fanglomerate with unsorted subangular clasts.

Kgd — Granodiorite undivided (Cretaceous) - Mostly hornblende-biotite granodiorite; coarse to medium grained.

Kgt — Tonalite undivided (Cretaceous) - Mostly hornblende-biotite tonalite; coarse-grained, light gray.

KJm — Metavolcanic and metasedimentary rocks undivided (Cretaceous and Jurassic) - Low grade (greenschist facies) rocks that are in part coeval with and in part older than the Cretaceous plutonic rocks they lie in contact with.

MAP SYMBOLS

Contact between map units; generally approximately located.

Strike and dip of inclined sedimentary beds.

Strike and dip of foliation in metavolcanic and metasedimentary rocks.

Landslide - arrow(s) indicate principal direction of movement, outline includes headscarp of landslide. Querried where questionable.

REFERENCES

Boss, R.F., Olmstead, F.H., Riley, F.S., and Worts, G.F., 1958, Unpublished U.S. Geological Survey geological mapping of Camp Joseph H. Pendleton Marine Corps Base maps, scale 1:24,000.

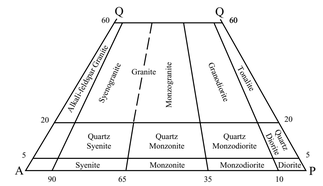
Davis, A.F., 1989, Geology of the U.S. Marine Corps Base Camp Pendleton, California: Terra Geotechnical, unpublished, scale 1:24,000.

Elliot, W.J., 1985, Geology of Morro Hill area, northwestern San Diego County, California in Abbott, P.L., editor , On the manner of deposition of the Eocene strata in northern San Diego County : San Diego, California, San Diego Association of Geologist, P. 85.

Larsen, E.S., Jr., 1948, Batholith and associated rocks of Corona, Elsinore and San Luis Rey Quadrangles, southern California: The Geological Society of America Memoir 29, Plate 1, scale 1:125,000.

Moyle, W.R., Jr., 1973, Geologic map of Camp Pendleton, southern California: U.S. Geological Survey Open-File Map, 2 plates, scale 1:48,000.

Weber, H.F., Jr., 1963, Geology and mineral resources of San Diego County, California: California Division of Mines and Geology County Report 3, Plate 1, scale 1:120,000.



Classification of plutonic rock types (from IUGA, 1973, and *Streckeisen, 1973). A, alkali feldspar; P, plagioclase feldspar; Q, quartz.

*Streckeisen, A.L., 1973, Plutonic rocks--Classification and nomenclature recommended by the IUGA Subcommission on Systematics of Igneous Rocks: Geotimes, vol.18, pp.26-30.